

Anderson Memorial Bridge Rehabilitation Project

Boston/Cambridge



Conceptual Design Stage Public Information Meeting

Tuesday, December 15, 2009

7:00 – 8:30 PM

Dr. Martin Luther King, Jr. School
100 Putnam Avenue,
Cambridge, MA

*Rendering by: Walt Baranowski –
Brown, Richardson & Rowe*

Agenda

- Accelerated Bridge Program Overview
- Charles River Basin Projects
- Anderson Memorial Bridge Rehabilitation
- Discussion



Program Overview

- **Authorization:**

- Chapter 233 of the Acts of 2008
- Program must be complete by 2016

- **Program Goals:**

- Improve the Condition of the Commonwealth's Bridges
- Stimulate Economic Development and Job Creation
- Save Money by Completing Projects Sooner
- Complete Projects Efficiently and Innovatively
- Provide Access and Opportunity for all
- Manage with Transparency and Accountability

Program Overview- 8 years only

- **Size and Scope**

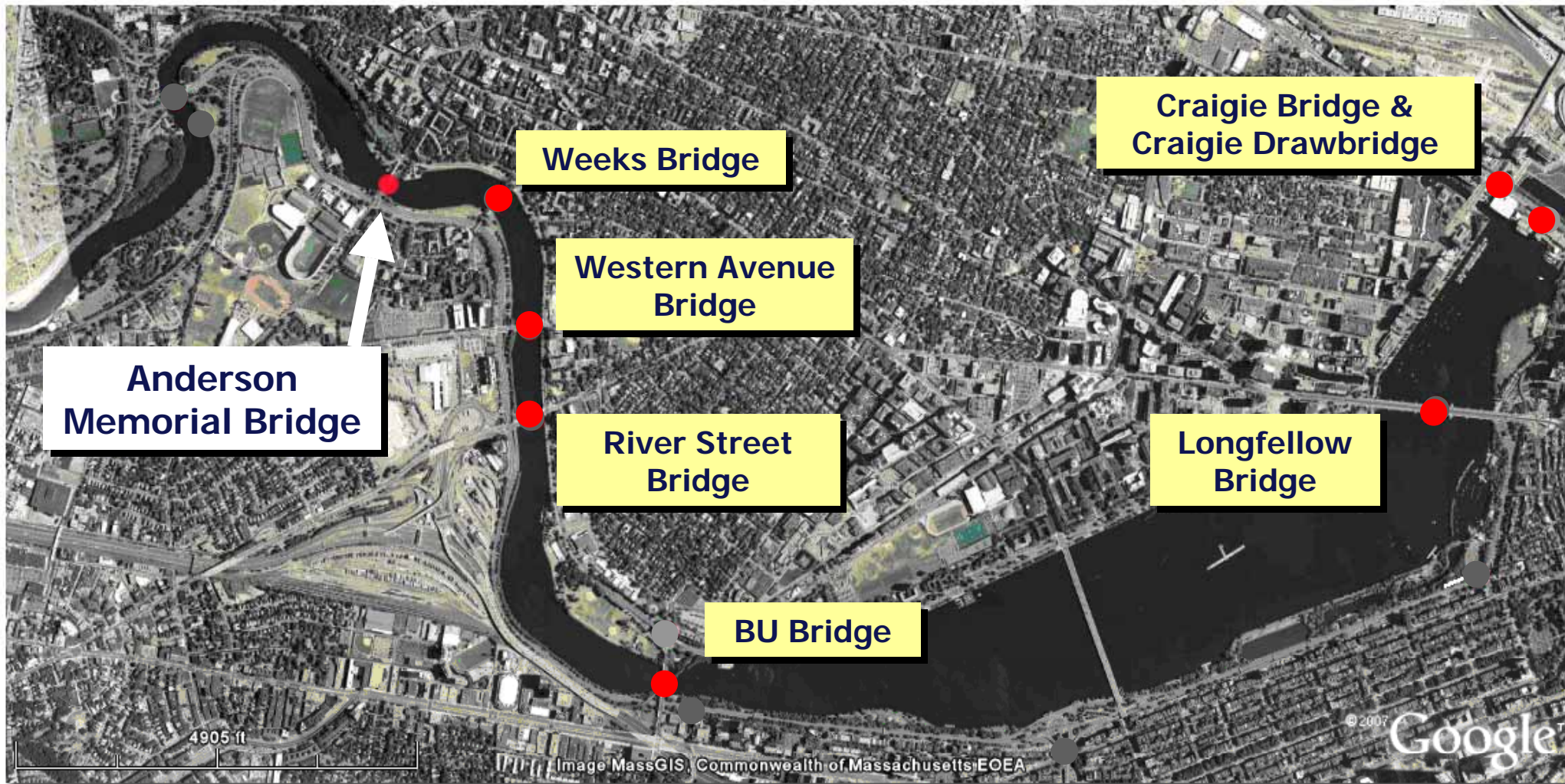
- Former MassHighway: \$2.078 billion
 - rehabilitation or replacement of 189 bridges
 - preservation of 305 bridges
- Former DCR: \$906 million
 - rehabilitation or replacement of 29 bridges
 - preservation of 50 bridges

MassDOT Total Program: \$2,984,000,000

Anderson Memorial Bridge



Anderson Memorial Bridge



Anderson Memorial Bridge Key Plan

Anderson
Memorial Bridge

JFK Street

Harvard
Stadium

North Harvard St.

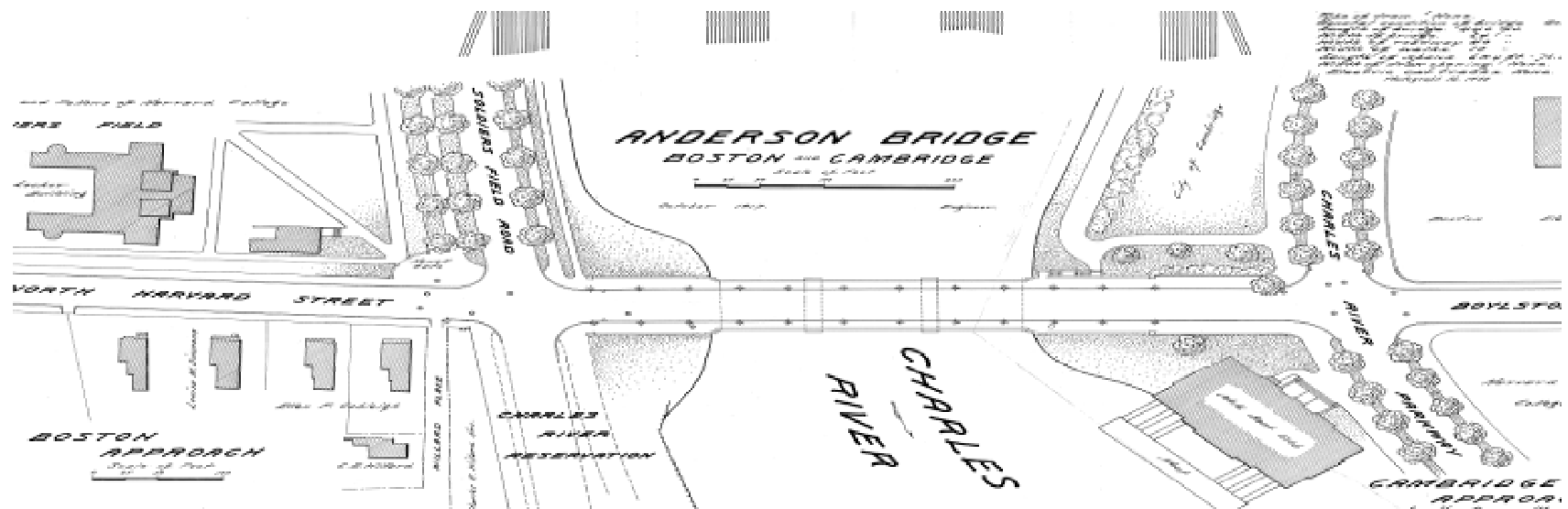
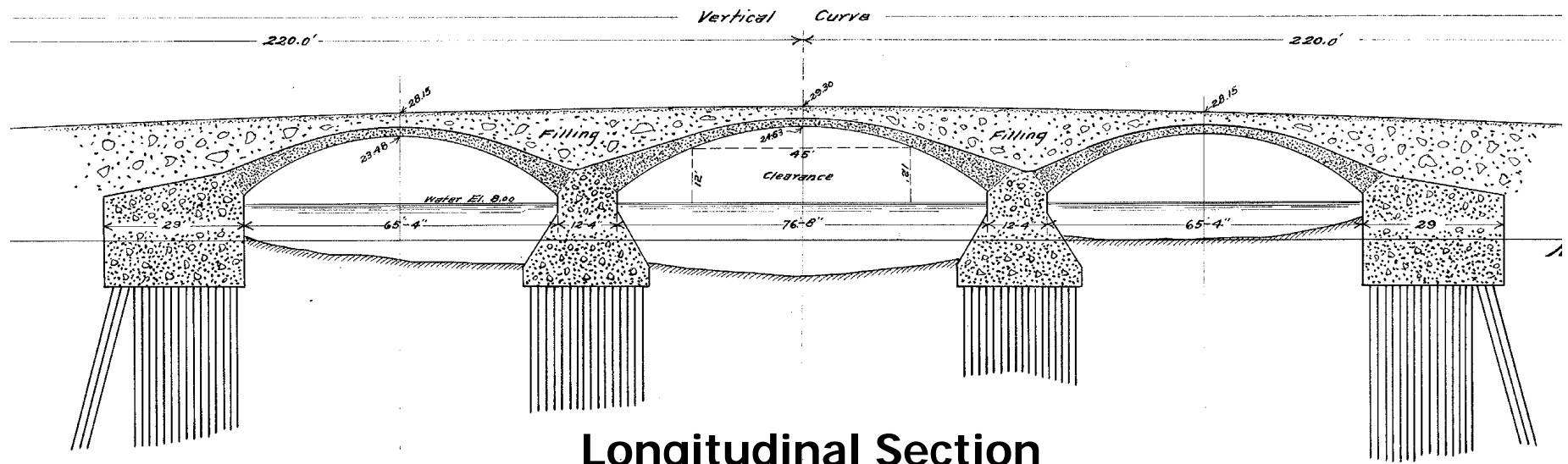
Weeks
Pedestrian
Bridge



Existing Bridge

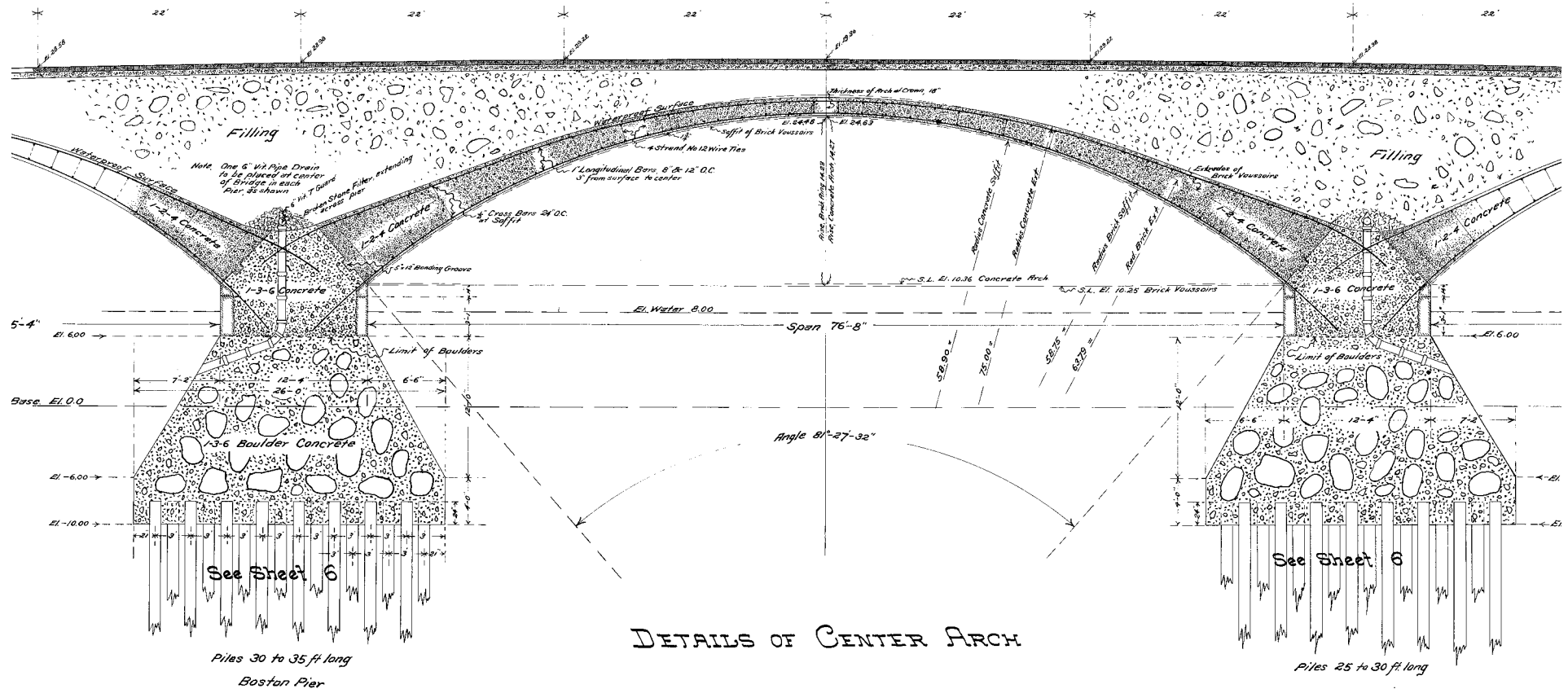
- Three-span earth filled concrete arch bridge
- 440 feet long (including approaches)
- Two 10-foot lanes each way
- 10-foot sidewalks on each side of the bridge
- Built in 1913
- Historic Bridge
 - Listed on State and National Registers of Historic Places
 - Integral component of historic Charles River Basin





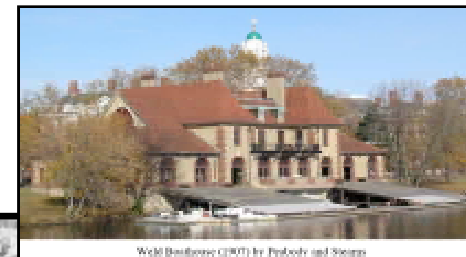
Existing Bridge

Longitudinal Section at Center Arch



Cultural Resources

- Entire Area has Historic Significance
 - Charles River Basin – National Register Historic District
 - Anderson Memorial Bridge
 - Area buildings and structures
 - JFK Memorial Park
- Rehabilitation must follow the 'Standards for the Treatment of Historic Properties'



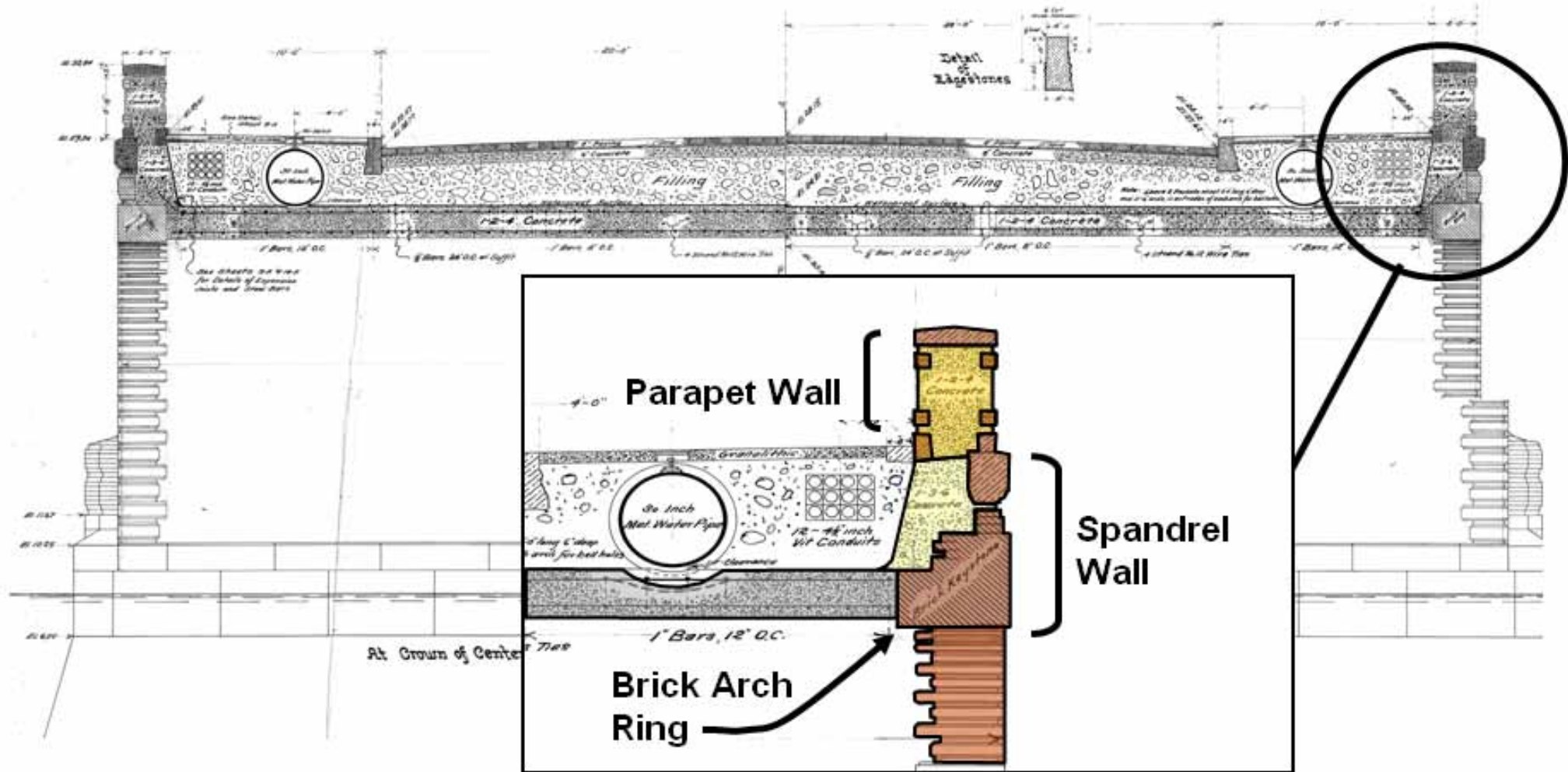
This is the site of the "Great Bridge" (opened in 1662) which was considered the first bridge of consequence built in America.



Cultural Resources Identification Map

Existing Bridge

Section at Crown

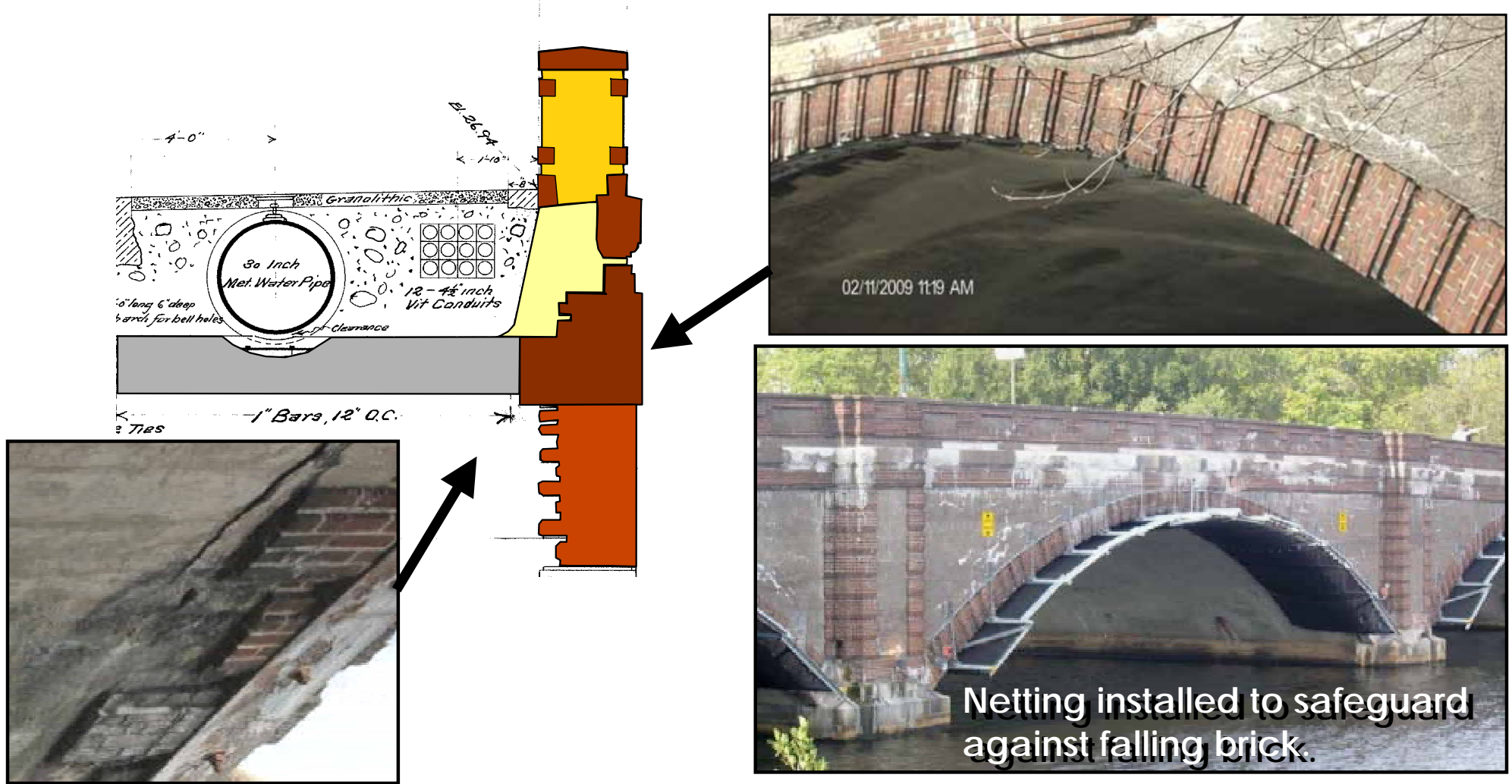


Existing Condition

Bridge Element	Condition Rating
Concrete Arches	Fair
Brick Ring Arches	Poor
Parapets & Spandrel Walls	Poor
Piers and Abutments	Satisfactory
Wingwalls (along approaches)	Fair
Stairs	Poor

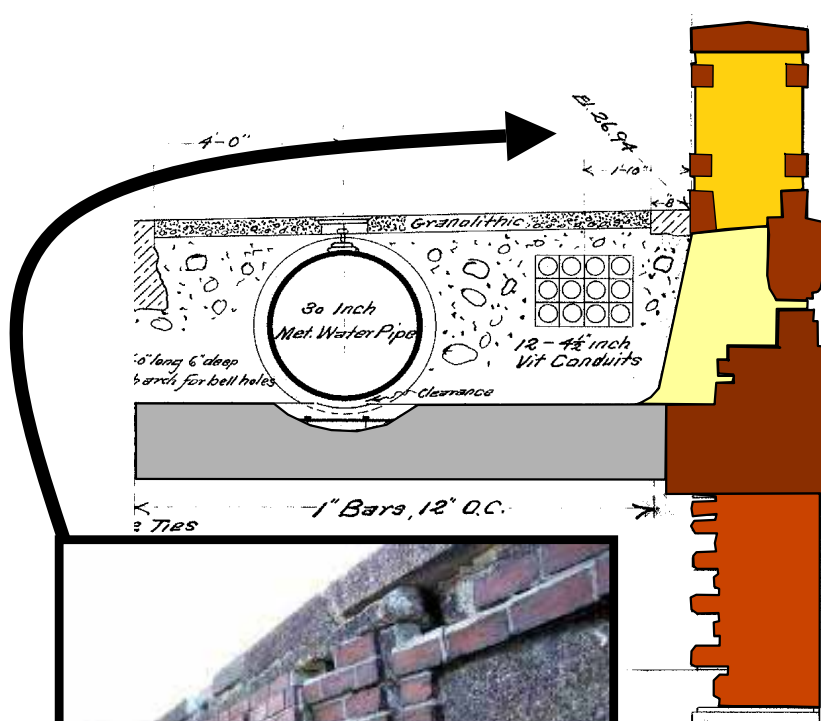
Existing Condition

Brick Arch Ring



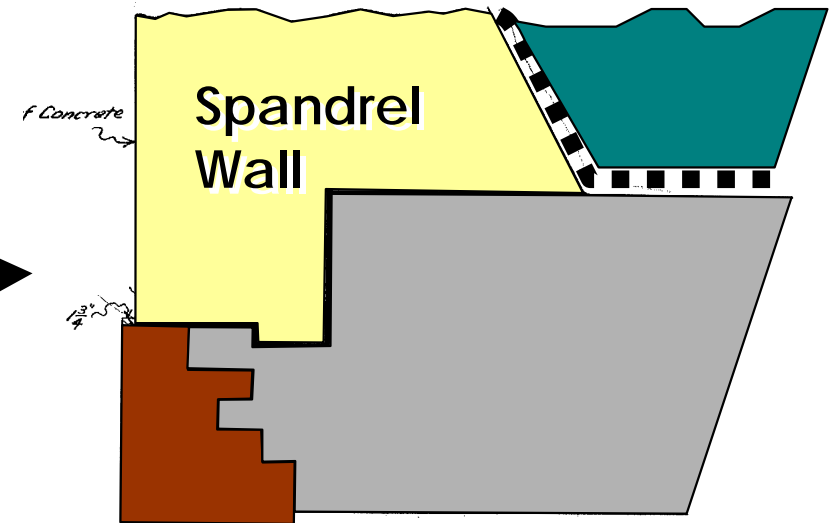
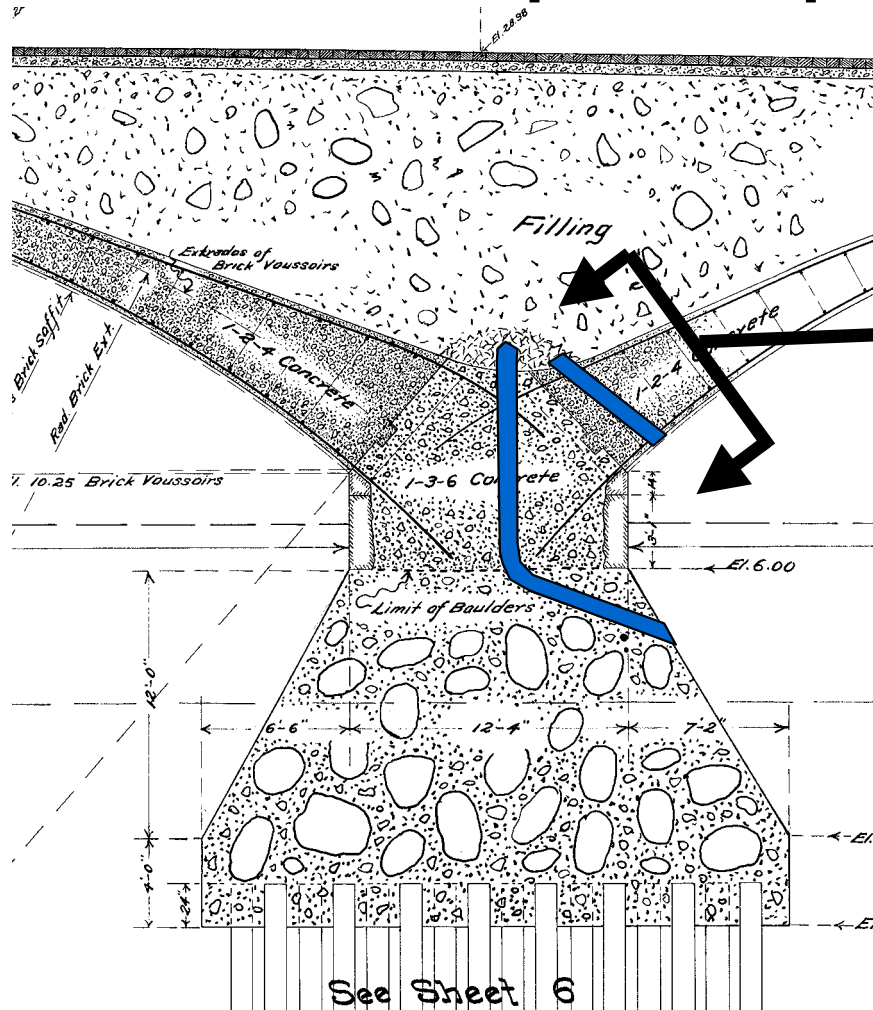
Existing Condition

Parapet & Spandrel Walls

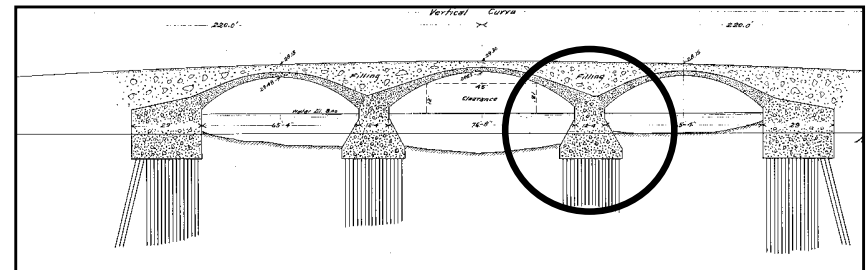


Existing Condition

Parapet & Spandrel Walls

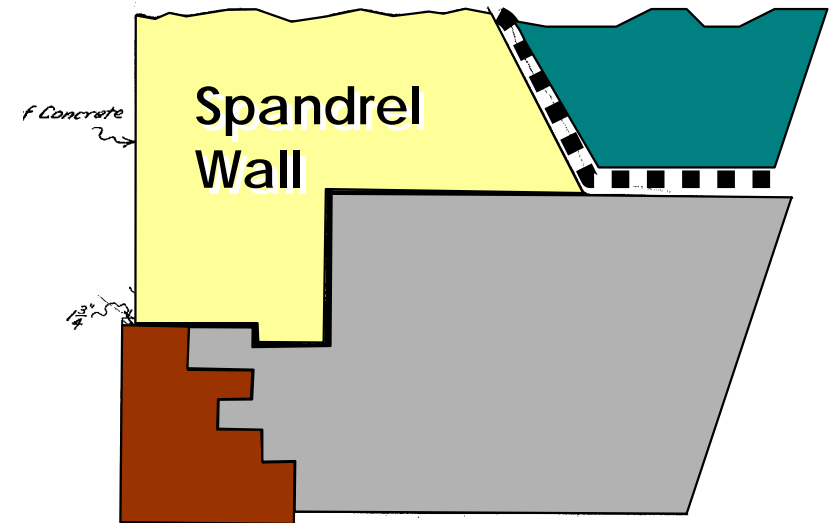


Section at Springline



Existing Condition

Parapet & Spandrel Walls



Section at Springline

Water & ice damage induced by inadequate or inoperable drainage at piers and waterproofing .



Existing Condition

Wingwalls & Stairs





Existing Concrete Arches

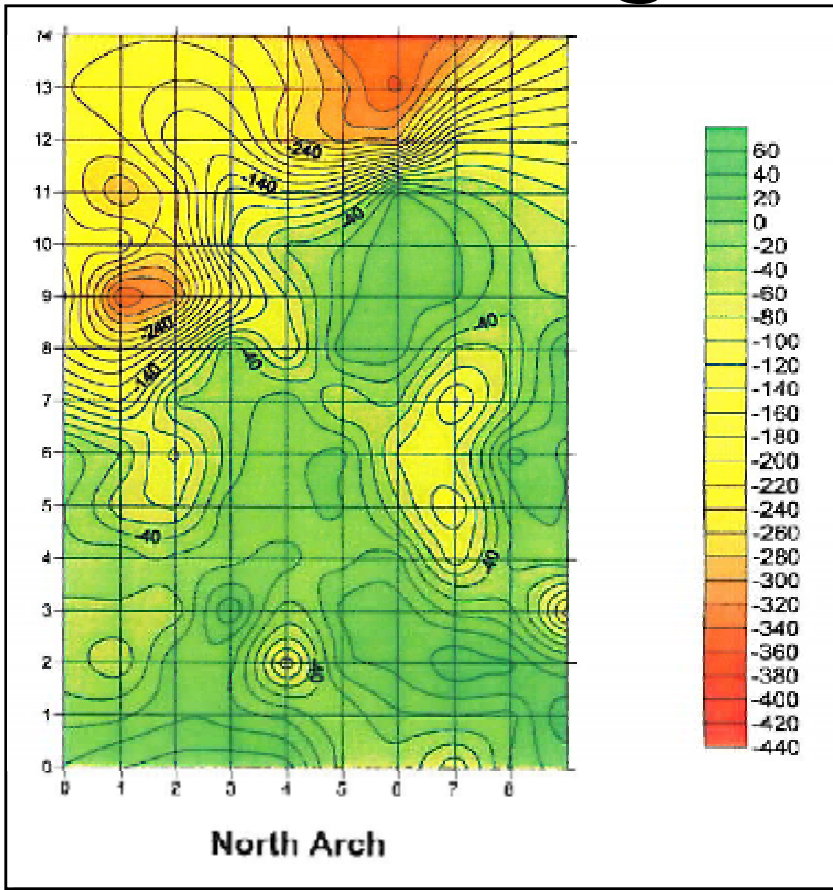
Existing Condition

Concrete Arches

- Concrete deterioration
- Reinforcing steel corrosion
- Extensive field investigation
- Material testing program



Condition Assessment & Material Testing of Concrete Arches

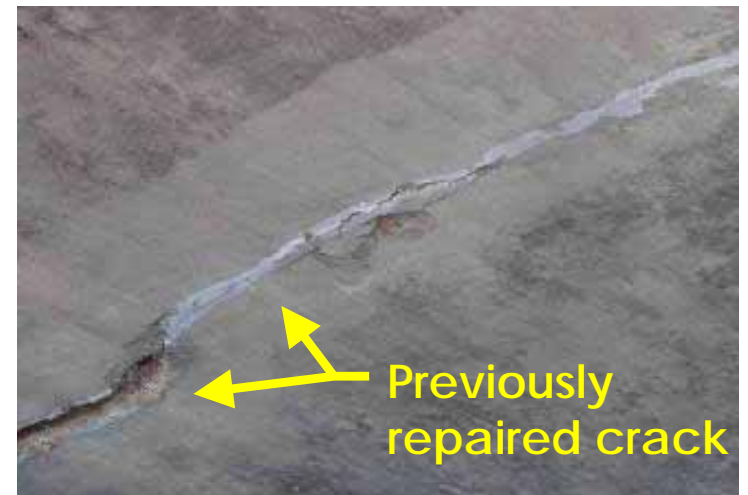


Half cell potential measurements
on underside of concrete arches

- **Compressive Strength**
 - 12 samples tested
 - Min. Compressive Strength = 5,410 psi
 - Avg. Strength = 7,800 psi
- **Chloride Content**
 - Ranges from 0.27 to 4.70 lbs/cy
 - Most cores taken in areas w/sound concrete are within the acceptable range (< 1.25 lbs/cy)

Condition Assessment of Concrete Arches

- Concrete has sufficient strength for current loads
- Extensive concrete repairs and protective measures will be required to retain arches
- Defining the rehabilitated structure's "Design Life" is the critical factor



Rehabilitation Needs

(based on Conditions Assessment)

- Retain existing piers and abutments
- Rehabilitate Existing Arches
- Restore ornamental features where possible
- Replace bridge elements:
 - Spandrel walls
 - Approach walls
 - Parapets
 - Lighting



Existing Conditions - Traffic

Traffic Element	Existing Condition
<u>Traffic Signals/Intersections</u> @ Cambridge Approach @ Boston Approach	Level of Service F Level of Service B-C
Turn Lane Provisions	Inadequate
Pavement & Markings	Poor
Pedestrian Accommodations	Fair
Bike Accommodations	No dedicated lanes on bridge or JFK St.

Charles River Bike and Pedestrian Study

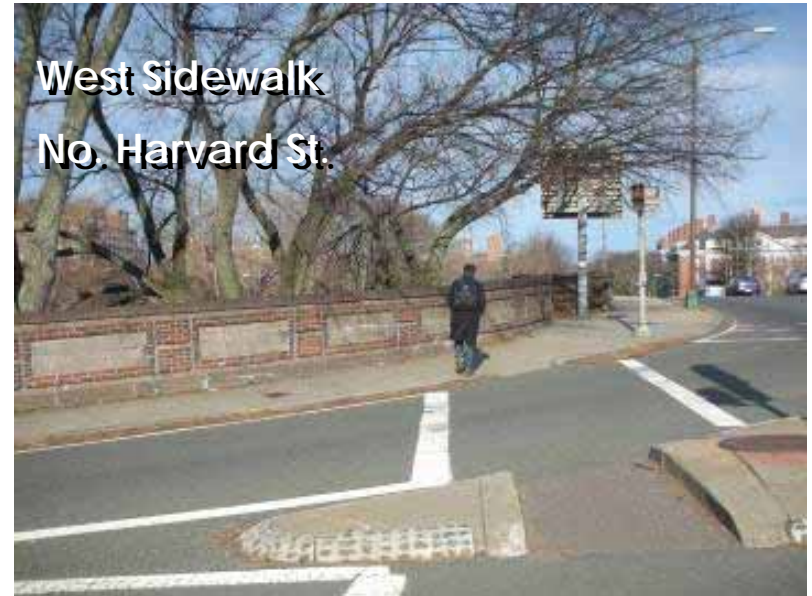
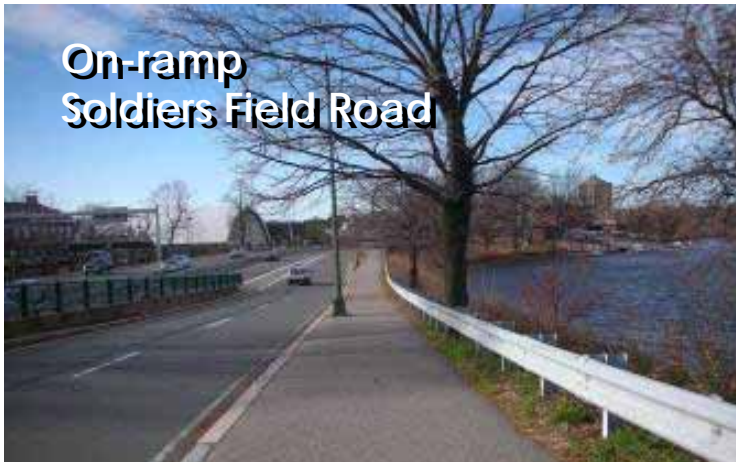
- MassDOT's bike and pedestrian study consultant (Halvorson) is here to listen to ideas and issues specific to this project
- Pedestrian and bike access will be coordinated with the potential Charles River Basin Wide improvements
- Bridge requirements and constraints will be factored into the study

Traffic Assessment

- Traffic Analysis is based on future volumes
- Pedestrian Access
- Bike access and linkages
- Connections at both approaches (vehicles, pedestrians and bikes)



Traffic Assessment

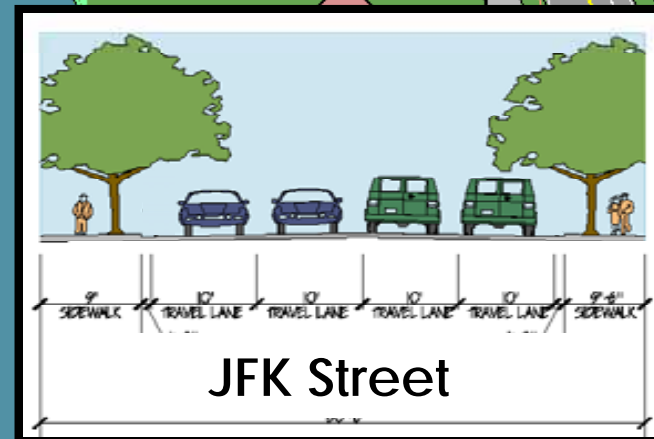
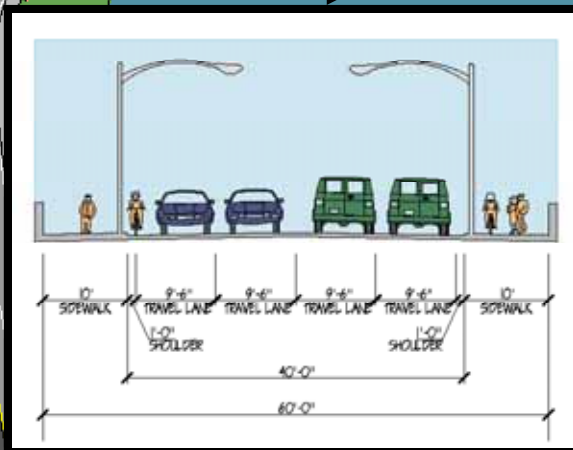
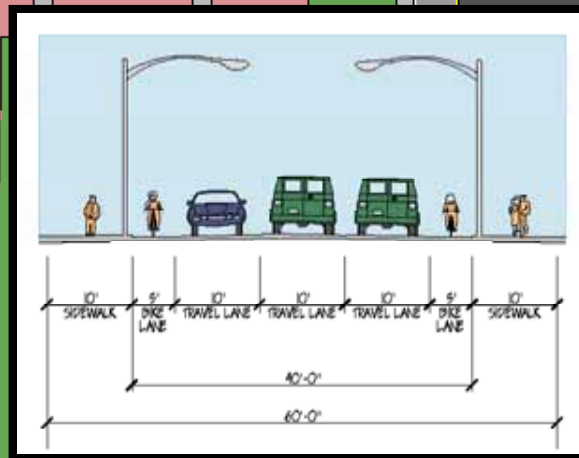


Traffic Volumes

Traffic	Volume (vehicles per hour)
Bridge - AM Peak Hour Traffic	1,655
Bridge - PM Peak Hour Traffic	1,810
Memorial Dr. - AM Peak Hour	1,720
Memorial Dr. - PM Peak Hour	1,680
Non-motorized User Count * (Pedestrians, Joggers + Bicyclists)	1,844* (weekday) 1,484* (weekend)

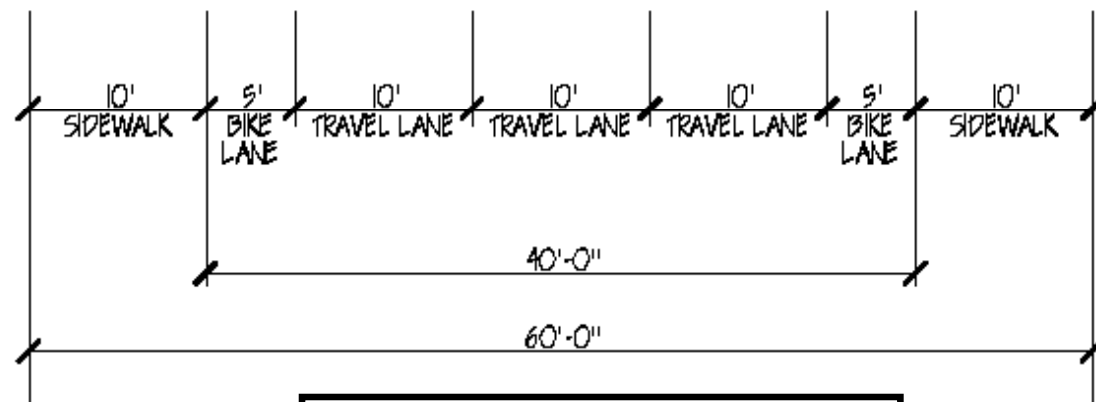
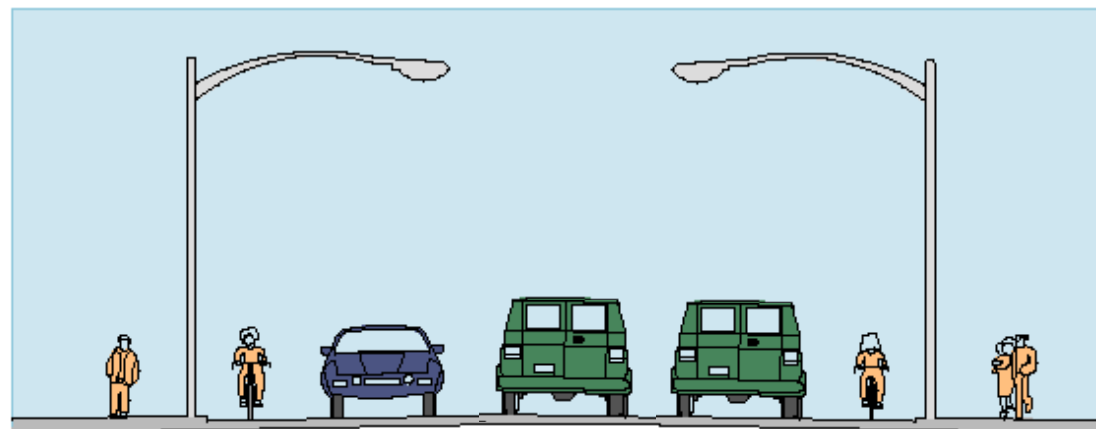
* The non-motorized counts shown above represent two-hour count totals, taken in September 2009 as part of the Charles River Basin Pedestrian and Bike Study.

Existing Traffic



EXISTING ROADWAY SECTIONS

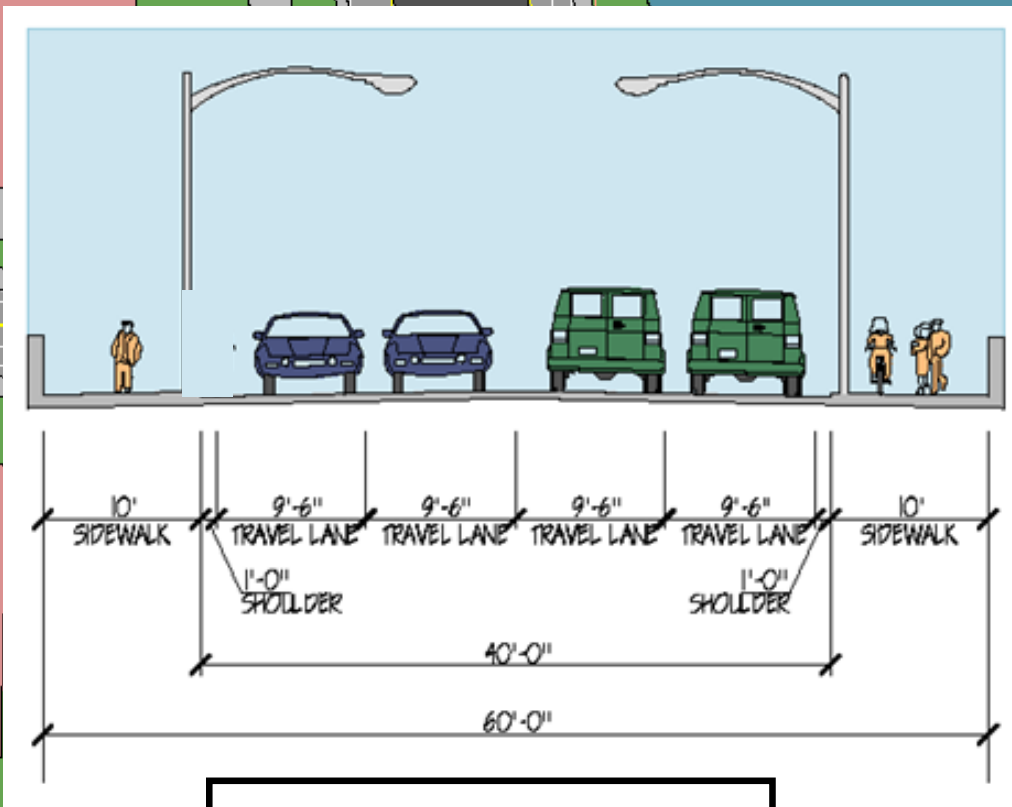
Existing Traffic



No. Harvard St.

EXISTING ROADWAY SECTIONS

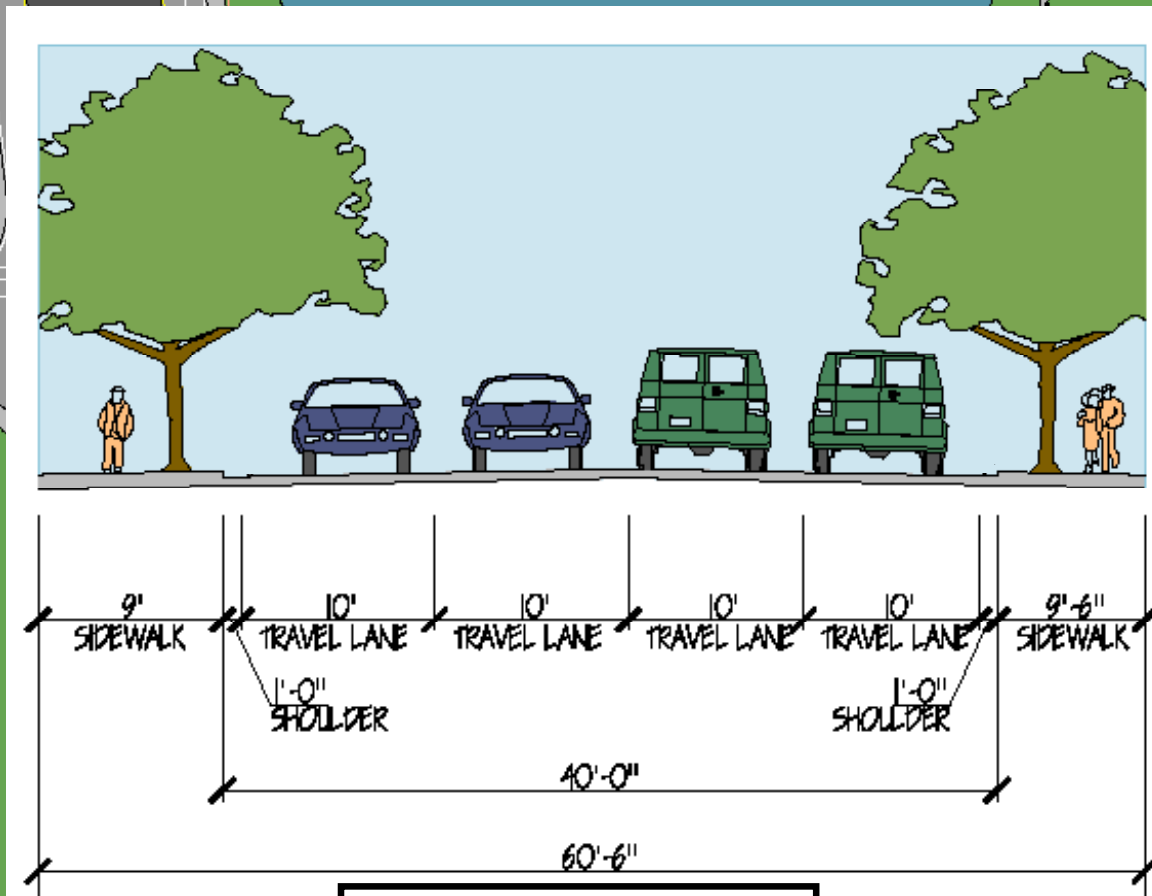
Existing Traffic



Anderson Bridge
(Existing)

EXISTING ROADWAY SECTIONS

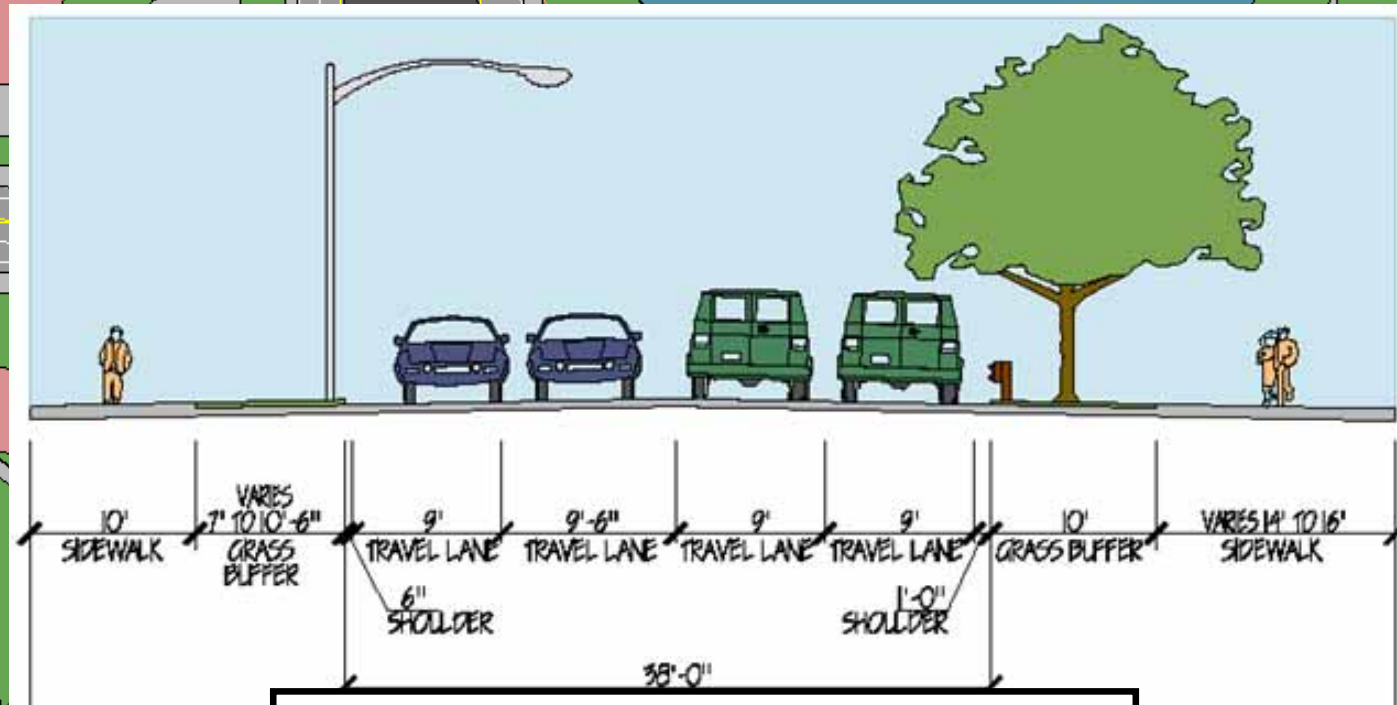
Existing Traffic



JFK Street

EXISTING ROADWAY SECTIONS

Existing Traffic



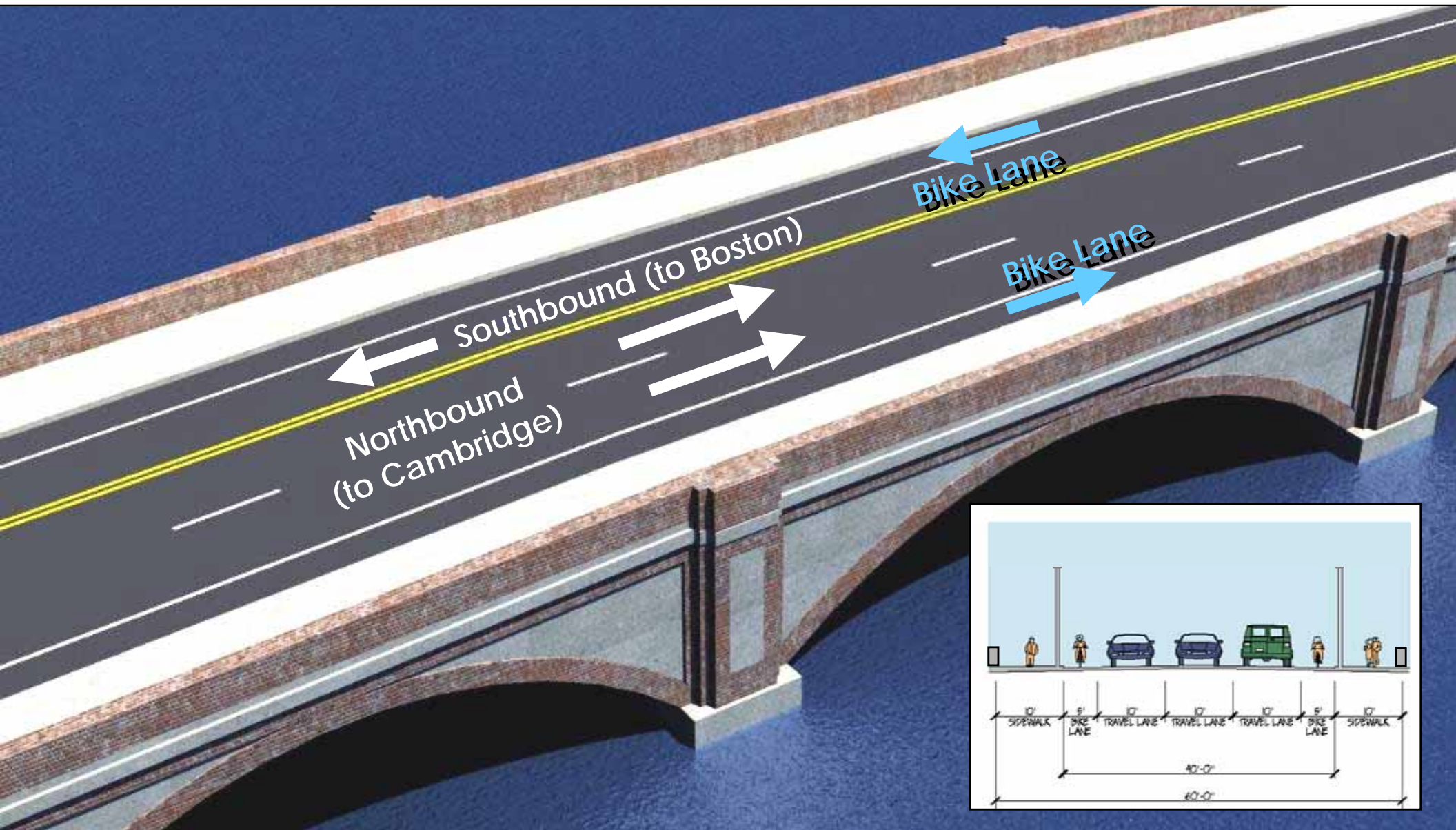
Memorial Drive

EXISTING ROADWAY SECTIONS

Potential Traffic Concepts

1. Reduce travel lanes from 4 to 3 and provide bike lanes across Anderson Memorial Bridge.
2. Boston approach - close westbound on-ramp to Soldiers Field Road.
3. Enhanced pedestrian connections (eliminate islands, curb modifications...).
4. Cambridge approach - prohibit certain turning movements to enhance the overall pedestrian and vehicular flows.
5. Potential bridge widening to improve travel lane and sidewalk widths.

Potential Roadway Section w/Bike Lanes



Anticipated Schedule

Activity	Date / Duration	2009					2010					2011					2012														
		J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Conceptual Design	5 mos.																														
Design & Permitting	6 mos.																														
Construction	30 mos																														

Note: Firm dates will be established based on an integrated schedule that includes all of the basin projects.

Project Contact Information

- Tracy Osimboni, MassDOT Highway Division
Project Manager:
Tracy.osimboni@State.ma.us
- Stephanie Boundy, Public Outreach
Coordinator:
Stephanie.Boundy@State.ma.us

Discussion

